

Navy Advancement Center

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**Advancement Handbook
for
Electronics Technician
(Navigation)(Submarine)**

(For advancement exams designated as ETV)

This Advancement Handbook was last revised in: September 1998

PREFACE

The purpose of this Advancement Handbook is to help you focus your preparation for Navywide advancement-in-rating examinations. The exam-specific bibliographies (BIBs) and this handbook form a comprehensive examination study package. Since this handbook provides skill and knowledge components for each paygrade of the ET (Navigation)(Submarine) rating, it helps you concentrate your study on all areas that may be tested. This feature will help you get the most out of your study time.

Each page in Parts 1 through 4 of this Advancement Handbook presents general skill areas, specific skill areas, the knowledge factors associated with each skill area, the pertinent references that address each skill, and the subject areas that may be covered on the examination. The skill statements describe the skills you are expected to perform for each paygrade. The skill statements are cumulative; that is, you are responsible for the skills for the paygrade you are competing for, your present paygrade, and all paygrades below.

Although this handbook is very comprehensive, it cannot cover all the tasks performed in the rating. As a result, the advancement examinations may contain questions more detailed than described in the “*Exam Expectations*” section of the skill areas.

Remember that advancement competition is keen, so your keys to advancement include not only comprehensive advancement examination study but also sustained superior performance.

Prepared by

Naval Education and Training Professional
Development and Technology Center

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Part 1

Advancement Handbook for ETV3

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Radar
A <i>skill</i> you are expected to perform from the General Skill Area above:	Demonstrate an understanding of the skills and knowledges prescribed by the Radar Operator Qualification Card
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none">• An understanding of radar theory of operation, system and equipment operating instructions and procedures, and operating parameters• Radar principles, including microwave electronics• Equipment component terminology• Radar navigation and plotting techniques

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<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> • Radar equipment technical manuals applicable to your class of submarine (BPS 15 (series), BPS 16, etc.). • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine. • <i>Maneuvering Board Manual</i>, Pub 217 • <i>Radar Navigation</i>, Pub. 1310 • <i>Navigation/Operations Department Organization and Regulations Manual</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29 • <i>Standard Submarine Organization and Regulations Manual (SSORM)</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN) • NEETS Module 18 • The following submarine onboard training (SOBT) materials: <ul style="list-style-type: none"> – <i>Maneuvering Board</i>, SCP-N-004 – <i>Maneuvering Board Operation</i>, CBI-N-9757 – <i>Basic Submarine Navigation</i>, SVT-N-9312 – <i>Submarine Radar Navigation</i>, SVT-N-001
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – System start up and shut down procedures – Radar mast operation – Ring time adjustment procedures – Operating procedures and instructions – Radar navigation watchstanding requirements and procedures – Equipment functional description – Theory of radar principles – Safety precautions – Security precautions

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General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Demonstrate an understanding of the skills and knowledges prescribed by the Basic Navigation/Operations Department Qualification Card (SSNs and SSBNs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Watchstanding organization • Location and use of damage control and first aid equipment • Personnel and classified material security requirements, including security areas of the ship • Personnel and equipment electrical safety requirements, including electrostatic discharge (ESD) precautions • Quality Assurance (QA) program requirements, including SUBSAFE work packages and boundaries • CMS user responsibilities • 3-M/PMS worker procedures • Tagout procedures
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • All applicable instructions and technical references required by the Basic Navigation/Operations Department Qualification Card (SSNs and SSBNs) • <i>CMS 1A</i>, chapters 1 and 2 • <i>Department of the Navy Information and Personnel Security Program Regulation</i>, OPNAVINST 5100.1; chapters 1, 2, 4, 5, 6, 9, 10, 13, 14, 15, and 17 • Damage Control ship's service manuals (SSMs) applicable to your class of submarine • <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29) • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN)

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	<ul style="list-style-type: none">• 3-M Manual, OPNAVINST 4790.4, chapters 1 and 3• <i>Standard Organization and Regulations Manual (SORM)</i>, OPNAVINST 3120.32, chapter 630.17• <i>Joint Fleet Maintenance Manual Volume 5</i>, CINCLANTFLT/CINCPACFLTINST 4790.3, Part 2 chapters 1, 2.1, 2.5, 3, 4.1, 4.3, 10.1, and 10.5; and Appendices A and B• <i>Naval Ships' Technical Manual Library, (NSTM)</i>, chapters 77, 79, 223, 313, 555 volume 2, 594, and 670• The following submarine onboard training (SOBT) materials:<ul style="list-style-type: none">– <i>SUB Electrical Safety</i>, SOBT #17– <i>Electrostatic Discharge (ESD) Precautions and Procedures</i>, SVT-S-200– <i>Electrostatic Discharge (ESD)</i>, ICW-N-001– <i>ESD, The Invisible Threat</i>, SOBT #14– <i>Submarine Damage Control Equipment</i>, SOBT #18– <i>Submarine Fire Fighting Techniques</i>, SVT-DC-9659– <i>Submarine Forces Afloat Intro to NAVOSH</i>, SOBT #16– <i>Hazardous Material Control Afloat Users</i>, SVT-HM-9450– <i>Submarine TAG-OUT Procedures</i>, SVT-GT-9440– <i>3-M for the Junior Worker</i>, SVT-GT-9511
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<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none">– Watchstanding organization and responsibilities– Classified material stowage requirements– Personnel security requirements– CMS user responsibilities and requirements– Ship's tagout procedures– Quality Assurance forms and procedures, including SUBSAFE boundaries– 3-M/PMS forms and procedures– General shipboard safety and electrical safety– General and submarine damage control equipment and procedures
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General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Test, operate, and evaluate the ship's inertial navigation system (INS), including the global positioning system (GPS) equipment (SSNs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to test, operate, and evaluate ship's inertial navigation system (INS) equipment, global positioning system (GPS) equipment, and Electromagnetic Log (EM LOG) system and equipment • Systems and equipment theory of operation • Equipment component terminology • Equipment construction • 3-M/PMS worker procedures • Tagout procedures • Personnel and equipment electrical safety requirements, including electrostatic discharge (ESD) precautions
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Inertial navigation equipment technical manuals applicable to your class of submarine (ESGN, SINS, RLNG, etc.). • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine. • <i>Satellite Signals Navigation Set AN/WRN-6(V), Volume 1</i>, SPAWAR EE170-AA-OMI-010 • EM LOG equipment technical manuals operator procedures applicable to your class of submarine • 3-M Manual, OPNAVINST 4790.4; chapters 1 and 3 • <i>SORM</i>, OPNAVINST 3120.32; chapter 630.17 • <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29

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	<ul style="list-style-type: none"> • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN) • The following submarine onboard training (SOBT) materials: <ul style="list-style-type: none"> – <i>AN/WRN-6 (GPS) Operations</i>, CBI-N-9873 – <i>AN/WRN-6 (GPS) Trainer Version 1.5</i>, CBI-N-9451 – <i>SSN Navigation Handbook</i>, SSNNAV-002/97 – <i>SUB Electrical Safety</i>, SOBT #17 – <i>Electrostatic Discharge (ESD) Precautions and Procedures</i>, SVT-S-200 – <i>Electrostatic Discharge (ESD)</i>, ICW-N-001 – <i>ESD, The Invisible Threat</i>, SOBT #14 – <i>Submarine TAG-OUT Procedures</i>, SVT-GT-9440 – <i>3-M for the Junior Worker</i>, SVT-GT-9511
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Inertial navigation system operating procedures and instructions – Watchstanding requirements and procedures – GPS operating procedures and instructions – EM LOG operating procedures and instructions – Equipment detailed functional description – Theory of system and equipment operation – Ship's tagout procedures – 3-M/PMS forms and procedures

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General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Demonstrate an understanding of the skills and knowledges prescribed by the Strategic Navigation Center Qualification Card (TNCP and Non-TNCP SSBNs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to test, operate, and evaluate the Strategic Navigation System and equipment using operating instructions and procedures • System and equipment theory of operation • Equipment component terminology • Equipment construction • Strategic navigation safety and security requirements • Preventive Maintenance Management Plan (PMMP) procedures • Trouble and Failure Report (TFR) system procedures • Maintenance Support Data System (MSDS) program requirements • Strategic Systems Project Alterations (SPALT) policies and documentation • Test equipment calibration and recall system requirements • 3-M/PMS worker procedures • Tagout procedures
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • All applicable instructions and technical references necessary to complete the Strategic Navigation Center qualification card (TNCP and Non-TNCP SSBNs) • 3-M Manual, OPNAVINST 4790.4(series), chapters 1 and 3 • <i>SORM</i>, OPNAVINST 3120.32(series); chapter 630.17 • <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29

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	<ul style="list-style-type: none"> • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN) • The following submarine onboard training (SOBT) materials: <ul style="list-style-type: none"> – <i>Inertial Navigation Principles (Trident)</i>, ICW-N-003 – <i>Strategic Weapons System Overview</i>, ICW-N-001 – <i>Navigation subsystem reconfiguration (Trident)</i>, ICW-N-002 – <i>NSS A-Scan (Trident II)</i>, VT-N-038 – <i>SSN Navigation Handbook</i>, SSNNAV-002/97 – <i>SUB Electrical Safety</i>, SOBT #17 – <i>Electrostatic Discharge (ESD) Precautions and Procedures</i>, SVT-S-200 – <i>Electrostatic Discharge (ESD)</i>, ICW-N-001 – <i>ESD, The Invisible Threat</i>, SOBT #14 – <i>Submarine TAG-OUT Procedures</i>, SVT-GT-9440 – <i>3-M for the Junior Worker</i>, SVT-GT-9511
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Strategic navigation system operating procedures and instructions – System and equipment theory of operation – Equipment detailed functional description – PMMP instructions and procedures – TFR instructions and procedures – SPALT instructions and procedures – MSDS instructions and procedures – Ship's tagout procedures – 3-M/PMS forms and procedures

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General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
A <i>skill</i> you are expected to perform from the General Skill Area above:	Demonstrate an understanding of the skills and knowledges prescribed by the Auxiliary Electrician Forward Qualification Card
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to test and operate the following auxiliary support equipment: <ul style="list-style-type: none"> – Central Atmosphere Monitoring system (CAMS) – I/C switchboard (SSN) – C&C switchboard (SSBN) – Portable atmosphere monitoring equipment – MC systems and alarms (AN-WIC) – Shore phones – Ballast control panel – Ship control panel – Ship's gyro and associated equipment – Sound powered phones – Snorkel system circuit – Depth detecting systems – Tank level indicating system – Valve position indicating system – Ventilation system and precipitators – Bridge Suitcase • System and equipment theory of operation • Equipment component terminology • Equipment construction • 3-M/PMS worker procedures • Tagout procedures
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Auxiliary equipment technical manuals applicable to your class of submarine • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine • NEETS Module 15; chapter 3

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	<ul style="list-style-type: none"> • 3-M Manual, OPNAVINST 4790.4; chapters 1 and 3 • <i>SORM</i>, OPNAVINST 3120.32; chapter 630.17 • <i>NODORM</i> COMSUBLANT/COMSUBPAC Instruction 5400.29 • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN) • <i>Doctrine for Submarine Interior Communications</i>, COMSUBLANT/ COMSUBPACINST 2301.1 • The following submarine onboard training (SOBT) materials: <ul style="list-style-type: none"> – <i>AN/WSN-3 Operator</i> ICW, CBI-N-9653 – <i>Depth Sensing System</i>, CBI-LQ-9723 – <i>Tanks, Compartments, an Ship Characteristics</i>, CBI-LQ-9724 – <i>BCP and SCP</i>, CBI-LQ-9733 – <i>SUB Electrical Safety</i>, SOBT #17 – <i>Electrostatic Discharge (ESD) Precautions and Procedures</i>, SVT-S-200 – <i>Electrostatic Discharge (ESD)</i>, ICW-N-001 – <i>ESD, The Invisible Threat</i>, SOBT #14 – <i>Submarine TAG-OUT Procedures</i>, SVT-GT-9440 – <i>3-M for the Junior Worker</i>, SVT-GT-9511
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Auxiliary support equipment operating procedures and instructions – Watchstanding requirements and procedures – Equipment functional description – Theory of operation of the system and equipment – Ship's tagout procedures – 3-M/PMS forms and procedures

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General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance on auxiliary support equipment
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to perform preventive and corrective maintenance on: <ul style="list-style-type: none"> – Liquid level alarm sensing devices – Power failure and pressure alarm devices – Sound-powered phones, phone stations, and amplifiers – Valve indicating equipment – Remote water level and indicating equipment – Loudspeakers • System and equipment theory of operation • Equipment component terminology • Equipment construction • Tool usage and safety precautions • 3-M/PMS worker procedures • Tagout procedures

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<p><i>References</i> you should study to gain the knowledge you need to perform this skill:</p>	<ul style="list-style-type: none"> • Auxiliary equipment technical manuals applicable to your class of submarine • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine • 3-M Manual, OPNAVINST 4790.4(series), chapters 1 and 3 • <i>SORM</i>, OPNAVINST 3120.32(series), chapter 630.17 • NEETS Modules 16, 19, and 21 • Submarine onboard training (SOBT) material: <ul style="list-style-type: none"> – <i>SUB Electrical Safety</i>, SOBT #17 – <i>Electrostatic Discharge (ESD) Precautions and Procedures</i>, SVT-S-200 – <i>Electrostatic Discharge (ESD)</i>, ICW-N-001 – <i>ESD, The Invisible Threat</i>, SOBT #14 – <i>Submarine TAG-OUT Procedures</i>, SVT-GT-9440 – <i>3-M for the Junior Worker</i>, SVT-GT-9511
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Basic troubleshooting techniques and procedures – System and equipment preventive maintenance requirements – Corrective maintenance procedures – Theory of operation of the system and equipment – Equipment functional descriptions – Electrical safety precautions and procedures – Basic test equipment usage – Ship's tagout procedures – 3-M/PMS forms and procedures

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General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
A <i>skill</i> you are expected to perform from the General Skill Area above:	Test, operate, and evaluate synchros and servo systems
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to test, operate, and maintain synchros and servo systems • System theory of operation • How synchro and servo systems are used within electromechanical systems • Equipment component terminology • Equipment construction
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • NEETS Module 15, chapters 1, 2, and 4 • <i>Military Handbook, Synchros Description and Operation</i>, MIL-HDBK-225A • Auxiliary equipment technical manuals applicable to your class of submarine
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Theory of synchro and servo system and equipment operation – Synchro and servo classification and markings – Synchro and servo test and alignment procedures – Test equipment associated with testing synchro and servo related systems

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General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
<i>A skill</i> you are expected to perform from the General Skill Area above:	Maintain the ship's entertainment system
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to test, remove, and install ship's entertain system components • System/equipment theory of operation • Equipment component terminology
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Ship's Entertainment System SSM, S9SSN-W4-SSM-EKO (SSNs) Volume 3 Part 3 Chapter 10</i> • <i>Ship's Entertainment System SSM, S9SSB-X9-SSM-CHO (SSBNs) Volume 2 Part 9 Chapter 8</i> • Equipment manufacturers' technical manuals applicable to your ship's entertainment system • NEETS Module 19
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Interface of the ship's entertainment system with the interior communications system – Frequency bands of UHF, VHF, and cable television signals – RF cable characteristics and applications – Basic operation of entertainment system and its components

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General ET(V) <i>Skill Area</i>	General Electronics
A <i>skill</i> you are expected to perform from the General Skill Area above:	Demonstrate knowledge of basic electricity and electronics theory and applications
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • AC and DC circuit theory, including Ohm's law • Symbols used in schematic drawings • How to interpret and analyze schematic drawings • Transformer theory of operation
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Blueprint Reading and Sketching</i>, chapters 1, 5, 6, and appendices AIII-1 and AIV-1, NAVEDTRA 12014 • NEETS Modules 1 through 7
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none"> – Circuit schematic symbol recognition – AC and DC circuit theory of operation – Resistance, capacitance and inductance circuit knowledge, using OHM's law – AC and transformers theory of operation – Solid state devices and power supplies theory of operation – Basic matter, energy, and direct current theory – Basic generator and motor theory

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General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Maintain required allowance of nautical charts and publications current and corrected to date
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Ship's chart and publication allowance • NIMA reference numbers • Chart portfolio designations • Inventory and ordering procedures • How to plot navigational warnings contained in NAVAREAS, HYDROLANTS, HYDROPACS, and NAVHAZ messages • How to make <i>Notice To Mariners</i> and Navigation Information Network (NAVINFONET) corrections
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29, Chapters 1, and 6 • <i>Joint Operation Order 2000/201</i>, COMSUBLANT/COMSUBPAC, Annex D-7 • <i>Catalog of Maps, Charts, and Related Products; Hydrographic Products Information</i>, CATP2VO1UBD
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on associated terms, chart and publications numbering systems, classifications, and procedures for correcting charts and publications.

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General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Interpret navigation information contained in the ship's complement of National Imagery and Mapping Agency products to support safe navigation
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Hydrographic chart symbols and abbreviations • Information contained within the Coast Pilot, Fleet Guide, and Sailing Direction • Light characteristics from Light Lists and List of Lights • Buoy types and systems
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>U.S.A. Nautical Chart Symbols and Abbreviations: Chart No. 1</i> • <i>The American Practical Navigator: Bowditch</i>, Pub No. 9 Chapters 3, 4 and 5 • <i>Dutton's Navigation and Piloting</i>, 14th Ed., Chapters 4, 5, and 6
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on nautical chart types, projections, scales, and symbols. Also on how to use NIMA texts and tables to support voyage planning and navigation.

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General ET(V) <i>Skill Area</i>	Navigation
<i>A skill</i> you are expected to perform from the General Skill Area above:	Maintain the ship's official U.S. Navy navigation and operations logs and records
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • The purpose, format and use of the ship's deck log, topside log, position log, fathometer log, communications log, bearing book, and position report • How to maintain the records listed above
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Ship's Deck Log</i>; OPNAVINST 3100.7 • <i>The American Practical Navigator: Bowditch</i>; Pub No. 9 , Chapter 8 • <i>SSORM</i>, COMSUBLANT/COMSUBPACINST 5400.38 (SSBN) 5400.39 (SSN), Chapter 2 • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST 5400.29, Chapter 6
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions pertaining to the proper maintenance, disposition, review, and approval of navigation logs and records.

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General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Interpret, plot and update submarine movement messages and operation orders
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to interpret, project onto charts and maintain current, various submarine water space assignment schemes IAW U.S. Submarine Force standards
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Joint Operation Order 2000/201</i>, COMSUBLANT/COMSUBPAC, Annex C • <i>ASW Exercise Manual: FXP-1</i> • <i>Operation Order 205</i>, COMSUBPAC
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on submarine movement terms, routing procedures, operational authorities, water space assignment requirements, operating restrictions, and safety standards.

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General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Use piloting instruments and plotting techniques to support safe surface and submerged navigation
<i>Knowledge</i> you should have to perform this skill:	<p>How to determine:</p> <ul style="list-style-type: none"> • Lines of position • Ship's position using available fix sources • Minimum/expanded cyclic routine • Ship's position using composite fix, bottom contour, and running fix methods • Fix expansion • Set and drift • Visual bearing error • Relative and true bearings
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>The American Practical Navigator: Bowditch</i>; Pub No. 9, Chapter 8 and 17 • <i>Dutton's Navigation and Piloting</i>, 14th Ed., Chapters 3, 7, 8 and 11 • <i>System Operating Procedures, SSN688/SSBN Class SSM Volume 6, Part 1</i>, Chapters 17 and 18 • <i>Basic Submarine Navigation</i>, SOBT (SVT-N-9310)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions pertaining to the purpose and proper use of the various piloting instruments to support safe submarine navigation under the prevailing circumstances.

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General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Prepare charts for restricted waters and open ocean navigation
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Compute and plot ship's track for rhumb-line and great circle sailing • Determine ship's points of intended movement (PIMs) • Compute and apply ship's advance and transfer • Compute and plot turn bearings and ranges • Compute and plot danger bearings and ranges • Compute and plot red and yellow soundings • Determine and label tracks, slide bars, navigation aids, hazards, tide and current stations, rendezvous points, demarcation lines, allowed operating areas, and restrictions • Prepare precision anchoring plans
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>The American Practical Navigator: Bowditch</i>; Pub No. 9, Chapter 25 • <i>Dutton's Navigation and Piloting</i>, 14th Ed. Chapters 4, 5, 6 and 13 • <i>System Operating Procedures, SSN688/SSBN Class SSM, Volume 6, Part 1</i>, Chapters 17 and 21 • <i>NODORM, COMSUBLANT/COMSUBPACINST 5400.29</i>

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<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on applicable chart preparation standards contained in the NODORM Piloting and Planned Operations Check-off lists.
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ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Complete navigational pre-underway and entering port requirements
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Set up and initialize navigation equipment • Determine and insert GPS way-points • Align and test running lights • Align and test communications and alarm circuits • Compare the ship's master heading reference with installed indicators and repeaters • Prepare track data cards • Prepare visual and radar navigation aids list • Compute tides and currents
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>System Operating Procedures, SSN688/SSBN Class SSM, Volume 6, Part 1, Chapters 17 and 27</i> • <i>NODORM, COMSUBLANT/COMSUBPACINST. 5400.29, Underway/Entering port Check</i> • <i>Tide Tables, NOSPBTTECSTNSA1</i> • <i>Current Tables, NOSPBTCTATCSTN1</i>
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions pertaining to underway and entering port preparation standards contained in the <i>NODORM</i> .

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Provide navigation data for required reports
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Compute and record moonrise and moonset • Compute and record sunrise and sunset • Compute zone time (ZT) and time conversion problems • Observe and compute azimuths of the Sun and Polaris to determine gyro error • Observe and record weather observations • Prepare ship's position report • Update the current operations binder
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>The Nautical Almanac</i>, NIMANAUTALMANAC • <i>The American Practical Navigator</i>, Bowditch, Pub. No. 9, Chapters 17, 18, 19 and 27 • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29, Chapter 6 • <i>Joint Operation Order 2000/201</i>, COMSUBLANT/COMSUBPAC, Annex C
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions regarding arc-to-time and time-to-arc conversion, sunrise, sunset, moonrise, moonset, and wind computations, including cloud and sea state recognition.

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Interpret installed navigation displays
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Interpret radar information and displays • Identify radar piloting techniques • Determine contact solutions using the maneuvering board (MOBOARD) • Interpret fathometer displays • Record and compare soundings to charted depths • Identify bottom contour navigation techniques
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>RADAR Navigation</i>, Pub 1310 • <i>The American Practical Navigator: Bowditch</i>, Pub. No. 9, Chapter 13 • <i>Dutton's Navigation and Piloting</i> 14th Ed., Chapter 36 • <i>Basic Submarine Navigation</i>, SOBT (SVT-N-9310) • <i>Maneuvering Board</i>, SOBT (SCP-N-004) • <i>AN/BQN-17 Fathometer</i>, SOBT (803636)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on radar interpretation associated with piloting and contact management, and fathometer interpretation associated with piloting and open ocean safe navigation.

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform DDRT plotting procedures (G199)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Man overboard procedures • Geographical plot procedures
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Mark 19, Mod 19 Description, Operation, and Maintenance</i>, SW289-AK-MMO-010 MK 19 Mod 19 • <i>Casualty Procedures, SSN688/SSBN Class SSM, Volume 6, Part 2</i>, Chapter 14 • <i>Target Motion Analysis (TMA) Techniques</i>, NWP 3-21.71, Vol. 1 • <i>Plotting Mechanics</i>, SOBT (SVT-P-9307)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on DDRT plotting techniques associated with man overboard recovery and GEO plot procedures.

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Recommend course of action based on international and inland navigation rules
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Apply the navigation rules • Determine responsibility under the navigation rules • Interpret steering and sailing rules • Interpret and use lights and shapes • Interpret and use sound and light signals
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Navigation Rules</i>, COMDTINST 16672.2C • <i>Rules of the Nautical Road</i>, SOBT (SCP-N-001)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions concerning the interpretation and application of international and inland navigation rules.

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Render shipboard honors and ceremonies
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Render honors to the National Ensign • Dress and full-dress the ship • Determine the seniority of U.S. Navy vessels • Render passing honors • Conduct official visits and side honors • Identify U.S. Navy flags and pennants
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>U.S. Navy Regulations</i>, Chapter 12 • <i>Single Flags and Pennants</i>, ATP 1 Vol. II; Chapter 2 • <i>U.S. Navy Flags, Customs, and Pennants</i>; NTP 13 • <i>Flags and Pennants</i>; SOBT (SCP-N-002)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions pertaining to flag and pennant displays, including the proper execution of U.S. Navy shipboard honors and ceremonies.

Part 2

Advancement Handbook for ETV2

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Radar Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance on the radar system and equipment
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Perform preventive maintenance on the radar system and associated equipment • Perform corrective maintenance on the radar system and associated equipment
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Radar equipment technical manuals applicable to your class of submarine (BPS 15 (series), BPS 16, etc.). • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine • NEETS Modules 9, 10, 11, 12, and 18 • 3-M Manual, OPNAVINST 4790.4; chapters 1 and 3 • <i>Naval Ships' Technical Manual Library, (NSTM)</i>, chapters 400 and 491 • Submarine onboard training (SOBT) material: <ul style="list-style-type: none"> – <i>Maneuvering Board</i>, SCP-N-004 – <i>Maneuvering Board Operation</i>, CBI-N-9757 – <i>Basic Submarine Navigation</i>, SVT-N-9312 – <i>Submarine Radar Navigation</i>, SVT-N-001

ADVANCEMENT HANDBOOK FOR ETV2

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none">– Preventive maintenance procedures and requirements– Corrective maintenance troubleshooting techniques and procedures– Theory of radar principles– Test equipment use and management– Radar navigation watchstanding requirements and techniques
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ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance on the ship's inertial navigation system (INS), including the global positioning system (GPS) equipment (SSNs)
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Perform preventive and corrective maintenance on the inertial navigation system and associated equipment, including GPS equipment • Perform preventive and corrective maintenance on the EM LOG equipment
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Inertial navigation equipment technical manuals applicable to your class of submarine (ESGN, SINS, RLNG, etc.). • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine. • <i>Satellite Signals Navigation Set AN/WRN-6(V)</i>, SPAWAR EE170-AA-OMI-010/020/30 • EM LOG equipment technical manuals applicable to your class of submarine • 3-M Manual, OPNAVINST 4790.4; chapters 1 and 3 • <i>Naval Ships' Technical Manual Library, (NSTM)</i>, chapters 400, 420, 422, and 491 • NEETS Modules 16 and 18

ADVANCEMENT HANDBOOK FOR ETV2

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none">– Preventive maintenance requirements and procedures– Corrective maintenance techniques and procedures– Theory of equipment/system operation– Test equipment use and management
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ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance for the Strategic Navigation System (SSBNs)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to perform preventive and corrective maintenance on the Strategic Navigation system/equipment • Strategic navigation safety and security requirements • Preventive Maintenance Management Plan (PMMP) procedures • Trouble and Failure Report (TFR) system procedures • Maintenance Support Data System (MSDS) program requirements • Strategic Systems Project Alterations (SPALT) policies and documentation • Test equipment use and management
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • All applicable instructions and technical references listed in the SWS and FBM Weapon System Documentation Requirements List (DRL), SSP OD 43853, applicable to your navigation system • 3-M Manual, OPNAVINST 4790.4; chapters 1 and 3 • <i>Naval Ships' Technical Manual Library, (NSTM)</i>, chapters 400, 408, 420, 422, and 491 • NEETS Modules 16 and 18

ADVANCEMENT HANDBOOK FOR ETV2

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none">– Preventive maintenance requirements and procedures– Corrective maintenance techniques– Theory of equipment/system operation– Test equipment usage and management– Watchstanding requirements
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ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance on auxiliary support equipment
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to perform preventive and corrective maintenance on the following auxiliary support equipment: <ul style="list-style-type: none"> – Central Atmosphere Monitoring system (CAMS) – I/C switchboard (SSN) – C&C switchboard (SSBN) – Missile Compensation system (SSBN) – MC systems and alarms (AN-WIC) – Shore phones – Ballast control panel – Ship control panel – Steering and diving electrical systems – Ship's gyro and associated equipment – Sound powered phones – Temperature and pressure alarm sensing systems – Synchro amplifiers – Synchro and servo systems – Depth detecting and indicating systems – Tank level indicating system – Valve position indicating system – Ventilation system and precipitators – Bridge Suitcase • Theory of system and equipment operation • Equipment component terminology • Equipment construction • Quality Assurance Program requirements and procedures

ADVANCEMENT HANDBOOK FOR ETV2

<p><i>References you should study to gain the knowledge you need to perform this skill:</i></p>	<ul style="list-style-type: none">• Auxiliary equipment technical manuals applicable to your class of submarine• Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine• NEETS Module 15, chapter 3• 3-M Manual, OPNAVINST 4790.4(series); chapters 1 and 3• <i>Naval Ships' Technical Manual Library, (NSTM)</i>, chapters 400, 491, 561, and 670• <i>Joint Fleet Maintenance Manual Volume 5</i>, CINCLANTFLT/CINCPACFLTINST 4790.3• <i>Naval Supply Procedures</i>, NAVSUP Publication 485
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the following areas:</p> <ul style="list-style-type: none">– Preventive maintenance requirements and procedures– Corrective maintenance techniques– Theory of equipment and system operation– Test equipment use and management– Watchstanding requirements

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	General Electronic
A <i>skill</i> you are expected to perform from the General Skill Area above:	Perform preventive and corrective maintenance on the following devices: <ul style="list-style-type: none"> • Power supplies • Voltage regulators • Transformers
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • How to perform preventive and corrective maintenance on power supplies, voltage regulators, and transformers • Electrostatic discharge (ESD) principles and prevention
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • NEETS Modules 1 through 7, 13, 14, 19, and 21 • Equipment technical manuals applicable to your class of submarine
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions on corrective maintenance techniques used for troubleshooting electronic circuits, including:</p> <ul style="list-style-type: none"> – Theory of electricity and electronics – Logic circuit theory and application – Operation and maintenance of test equipment – Safety precautions

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	General Electronic
A <i>skill</i> you are expected to perform from the General Skill Area above:	Interpret and verify ship's blueprints
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Understanding of symbols used on ship's blueprints • How to verify ship's blueprints
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Blueprint Reading and Sketching</i>, NAVEDTRA 12014; chapters 1, 5, 6, and appendices AIII and AIV • NEETS Module 4 • Equipment technical manuals applicable to your class of submarine • Applicable technical manuals related to your ship's systems and equipment
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect questions in the following areas:</p> <ul style="list-style-type: none"> – Blueprint graphic symbols for electrical and electronic diagrams – Blueprint graphic symbols for mechanical systems diagrams – Use of blueprints for troubleshooting electronic systems and equipment

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Inventory the ship's required allowance of navigational and operational charts, publications, records and directives
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Inventory NIMA hydrographic products • Inventory navigation operations records and directives
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29; Chapter 6 • <i>Joint Operation Order 2000/201</i>, COMSUBLANT/COMSUBPAC, Annex D-7 • <i>Chart Allowances</i>, COMSUBLANTINST. S3140.1 • <i>Chart Allowances</i>, COMSUBPACINST. S3530.2 • <i>Hydrographic Products Semiannual Bulletin Digest</i>, CATP2VOL1UBD • <i>Classified Hydrographic Products Semiannual Bulletin Digest</i>, CATP2VOL2CBD • <i>Essential Operational Documentation for Submarines (PUBSTAT)</i>, COMSUBLANT/COMSUBPACINST. 5601.4
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on when and how inventories must be conducted and how to use related references that prescribe operational allowances.

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Plot assigned Q-routes, emergency dispersal areas, and reactor accident anchorage's
<i>Knowledge</i> you should have to perform this skill:	How to: <ul style="list-style-type: none"> • Plot assigned Q-routes • Plot assigned emergency dispersal areas • Plot assigned reactor accident anchorage's
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Nuclear Warships Authorized Berths</i> OPNAVINST 3000.8 • <i>Joint Operations Order 2000/201</i>, COMSUBLANT/COMSUBPAC, Annex C
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect exam questions pertaining to the location; interpretation and projection of assigned Q-routes, emergency dispersal areas and reactor accident anchorages.

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Process weather and ice messages and reports
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Interpret and plot weather and ice messages • Interpret hydrographic (pilot) charts • Prepare weather and bathymetric reports
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Submarine Tactical Oceanography</i>, COMSUBLANT/PACINST C3140.3 • <i>Joint Operations Order 2000/201</i> COMSUBLANT/COMSUBPAC, Annex H • <i>Atlas of Pilot Charts</i>, NIMA Pub. No. 106 • <i>Guide to Marine Observing and Reporting</i>, NIMA Pub. No. 606 • <i>Hydrographic Bulletin Digest</i>, NIMA Pub. No. CATP2VO1UBD
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on interpreting and plotting fronts and eddies (FREDDIES) messages, recognizing pilot chart symbology, and preparing weather and bathymetric reports.

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Determine the ship's tactical characteristics associated with surfaced and submerged navigation
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Understanding of terms associated with submarine shiphandling characteristics • How to swing the ship to develop advance and transfer tables
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Dutton's Navigation and Piloting</i>, 14th Ed.; Ch.13 • Ship's specific tactical folder
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on the quantitative effects that course and speed changes impose on the travel of a submarine and the techniques a navigator uses in restricted waters to allow for these effects.

ADVANCEMENT HANDBOOK FOR ETV2

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Analyze “common factors and lessons learned from submarine incidents” for mishap prevention
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Recognize common factors attributed to submarine navigational mishaps • Identify events which should be considered navigational incidents • Identify U.S. Submarine Force standards adopted to prevent submarine navigational mishaps
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Joint Operations Order 2000/201</i> • COMSUBLANT/COMSUBPAC, Annex C • <i>Submarine Force Commander’s Collision and Grounding Brief</i>, SOBT (SL-ID-9320)
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions pertaining to past submarine navigational mishaps, including the required actions in the event of an incident

Part 3

Advancement Handbook for ETV1

ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	Radar Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise the operation, troubleshooting and maintenance of ship's radar systems and associated equipment
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • An in-depth understanding the radar system's operation, including watchstanding requirements • An in-depth understanding of radar theory • An in-depth understanding of the system's circuits and how to analyze the circuits • How to schedule preventive maintenance and maintain records • Personnel and equipment safety requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Radar equipment technical manuals applicable to your class of submarine (BPS 15 (series), BPS 16, etc.). • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine • <i>Maneuvering Board Manual</i>, Pub 217 • <i>Navy Occupational Safety and Health Program Manual</i>, OPNAVINST 5100.23 • NEETS Modules 9, 10, 11, 12, 13, and 18 • <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29 • <i>Radar Navigation</i>, Pub 1310 • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) / 5400.39 (SSN) • 3-M Manual, OPNAVINST 4790.4 • <i>Joint Fleet Maintenance Manual</i>, CINCLANTFLT/CINCPACFLTINST 4790.3 • <i>Naval Supply Procedures</i>, NAVSUP Publication 485

ADVANCEMENT HANDBOOK FOR ETV1

	<ul style="list-style-type: none">• Submarine onboard training (SOBT) material:<ul style="list-style-type: none">– <i>Basic Submarine Navigation</i>, SVT-N-9312– <i>Maneuvering Board</i>, SCP-N-004– <i>Maneuvering Board Operation</i>, CBI-N-9757– <i>Submarine RADAR Navigation</i>, SVT-N-001
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions in the following areas:</p> <ul style="list-style-type: none">– In depth radar electronic circuit analysis– Scheduling of maintenance and maintaining maintenance records– Radar navigation plotting analysis– Personal and equipment safety requirements and procedures– Quality assurance program requirements and procedures

ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise the operation, troubleshooting and maintenance of the ship's inertial navigation system and associated equipment (SSN and SSBN)
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • An in-depth understanding of the ship's navigation system's operation, including watchstanding requirements • An in-depth understanding of navigation system and associated equipment theory of operation • An in-depth understanding of the system's circuits and how to analyze the circuits • How to schedule preventive maintenance and maintain maintenance records • Personal and equipment safety requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • Inertial navigation equipment technical manuals applicable to your class of submarine (ESGN, SINS, RLNG, etc.) (SSNs) • All applicable instructions and technical references listed in the SWS and FBM Weapon System Documentation Requirements List (DRL), SSP OD 43853, applicable to your navigation system (SSBNs) • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine. • Damage control ship's service manuals (SSMs) applicable to your class of submarine • <i>Satellite Signals Navigation Set AN/WRN-6(V)</i>, SPAWAR EE170-AA-OMI-010/020/030 (SSN)

ADVANCEMENT HANDBOOK FOR ETV1

	<ul style="list-style-type: none">• EM LOG equipment technical manuals applicable to your class of submarine• 3-M Manual, OPNAVINST 4790.4• <i>CMS 1A</i>• <i>Department of the Navy Information and Personnel Security Program Regulation</i> OPNAVINST 5100.1H• <i>Joint Fleet Maintenance Manual</i> CINCLANTFLT/CINCPACFLTINST 4790.3• <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29• <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) / 5400.39 (SSN)• <i>Joint Fleet Maintenance Manual</i>, CINCLANTFLT/CINCPACFLTINST 4790.3• <i>Naval Supply Procedures</i>, NAVSUP Publication 485
<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions in the following areas:</p> <ul style="list-style-type: none">– In depth analysis of the ship's navigation system and associated equipment– Scheduling maintenance and maintaining maintenance records– Personal and equipment security requirements– Personal and equipment safety requirements and procedures– Quality assurance (QA) program requirements and procedures

ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
<i>A skill</i> you are expected to perform from the General Skill Area above:	Supervise the operation, troubleshooting and maintenance of ship's Auxiliary/Support equipment and associated equipment
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • In depth operation of the ship's Auxiliary/Support equipment and associated equipment including watchstanding requirements • In depth Auxiliary/Support equipment and associated equipment theory of operation • In depth circuit analysis • How to schedule preventive maintenance and maintain maintenance records • Personal and equipment safety requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • All applicable technical manuals related to your ship's auxiliary support equipment • Auxiliary equipment technical manuals applicable to your class of submarine • Ship's service manuals (SSMs), general information, and operating instructions (OIs) applicable to your class of submarine <i>3-M Manual</i>, OPNAVINST 4790.4 • <i>NODORM</i>, COMSUBLANT/COMSUBPAC Instruction 5400.29 • <i>SORM</i>, OPNAVINST 3120.32 • <i>SSORM</i>, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN) 5400.39 (SSN) • <i>Joint Fleet Maintenance Manual</i>, CINCLANTFLT/CINCPACFLTINST 4790.3 • <i>Naval Supply Procedures</i>, NAVSUP Publication 485

ADVANCEMENT HANDBOOK FOR ETV1

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions in the following areas:</p> <ul style="list-style-type: none">– In depth analysis of the ship's auxiliary/support equipment and associated equipment– Scheduling of maintenance and maintaining maintenance records– Personal and equipment safety requirements and procedures– Quality assurance (QA) program requirements and procedures
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ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	General Electronic
A <i>skill</i> you are expected to perform from the General Skill Area above:	Coordinate the troubleshooting of electronic circuits
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • In depth knowledge of electrical and electronic circuit theory and system circuits
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • All applicable technical manuals and electrical and electronic circuit theory manuals for assigned equipment
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect exam questions in the following areas:</p> <ul style="list-style-type: none"> – In depth analysis of electrical and electronic circuits – Circuit troubleshooting techniques – Test equipment use, maintenance, and management

ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	Navigation
<i>A skill</i> you are expected to perform from the General Skill Area above:	Plan and analyze navigation exercises
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Plan and analyze navigation exercises • Select essential charts for proposed transit • Review prepared charts for approval • Review navigation check lists for approval • Prepare and conduct piloting briefings • Prepare the Current Operations Binder
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>Joint Operation Order</i>, COMSUBLANT/COMSUBPACINST. 2000/201; Annex C • <i>Nautical Chart and Publication Allowances</i> COMSUBLANTINST. S3140.1 • <i>Nautical Chart and Publication Allowances</i>, COMSUBPACINST. S3530.2 • <i>Unclassified and Classified NIMA Nautical Charts and Publications</i>, CATP2VO1UBD & CATP2VOL2CBD • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29: • <i>Operating Procedures, Navigation</i>, SSN688/SSBN Class SSM Vol. 6., Part, Chapter 17 • <i>The American Practical Navigator, Bowditch</i>, Pub No. 9, Chapter. 25
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions on supervising safe navigation preparations IAW U.S. Navy Submarine Force standards.

ADVANCEMENT HANDBOOK FOR ETV1

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise and evaluate the ship's navigation team's performance during surfaced and submerged operations
<i>Knowledge</i> you should have to perform this skill:	<p>How to:</p> <ul style="list-style-type: none"> • Supervise and train the navigation team • Evaluate the navigation team in restricted waters and open ocean • Conduct periscope operations and bridge-to-bridge radio communications to support piloting and contact management • Identify and take action to correct unsafe navigation practices • Review logs, records and operational changes for completeness and accuracy • Prepare and administer Navigation Rules examinations
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>NODORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29 • <i>SSORM</i>, COMSUBLANT/COMSUBPACINST. 5400.38 (SSBN) and 5400.39 (SSN), Chapter. 2 • <i>Operating Procedures</i>, SSN688/SSBN SSM Vol. 6, Pt.1, Chapters 17 and 18 • <i>The American Practical Navigator</i>, Bowditch, Pub. No. 9, Chapter. 25, 27 • <i>Joint Operation Order 2000/201</i>; COMSUBLANT/COMSUBPAC, Annex C • <i>Target Motion Analysis</i>, NWP 3-21.71 • <i>Navigation Rules</i>, COMDTINST. M16672.2

ADVANCEMENT HANDBOOK FOR ETV1

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions on the supervision of navigation watchstanding, as prescribed by U.S. Navy Submarine Force standards.</p>
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Part 4

Advancement Handbook for ETVC

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Radar Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise the training, operation, and maintenance of the radar systems and associated equipment
<i>Knowledge</i> you should have to perform this skill:	Complete working and supervisory knowledge of all radar navigation systems and associated equipment applicable to your class submarine, including watchstanding requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • References listed for ETV3 through ETV1 • <i>Shipboard Electronics Material Officer</i>, NAVEDTRA 12969 • <i>Naval Safety Supervisor</i>, NAVEDTRA 12971
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect exam questions in the following areas:</p> <ul style="list-style-type: none"> – Preparing, maintaining, and updating all applicable maintenance and training records – In-depth system knowledge – Piloting procedures

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation Systems
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise the training, operation, and maintenance of the ship's inertial navigation system and associated equipment
<i>Knowledge</i> you should have to perform this skill:	Complete working and supervisory knowledge of ship's inertial navigation system and associated equipment applicable to your class submarine, including watchstanding requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • References listed for ETV3 through ETV1 • <i>Shipboard Electronics Material Officer</i>, NAVEDTRA 12969 • <i>Naval Safety Supervisor</i>, NAVEDTRA 12971
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect exam questions in the following areas:</p> <ul style="list-style-type: none"> – Preparing, maintaining, and updating all applicable maintenance and training records – In-depth system knowledge

ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Auxiliary/Support Equipment
A <i>skill</i> you are expected to perform from the General Skill Area above:	Supervise the training, operation, and maintenance of the ship's auxiliary/support equipment
<i>Knowledge</i> you should have to perform this skill:	Complete working and supervisory knowledge of ship's auxiliary/support equipment applicable to your class submarine, including watchstanding requirements
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • References listed for ETV3 through ETV1 • <i>Shipboard Electronics Material Officer</i>, NAVEDTRA 12969 • <i>Naval Safety Supervisor</i>, NAVEDTRA 12971
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	<p>You can expect exam questions in the following areas:</p> <ul style="list-style-type: none"> – Preparing, maintaining, and updating all applicable maintenance and training records – In-depth system knowledge

ADVANCEMENT HANDBOOK FOR ETV C

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Manage the ship's navigation administration.
<i>Knowledge</i> you should have to perform this skill:	<ul style="list-style-type: none"> • Ensure that all necessary navigational information is available and up-to-date prior to ship's movement • Review Navigation Division preparations for getting underway and entering port • Ensure that all charts intended for use are prepared IAW U.S. Submarine Force standards • Review all navigation-oriented logs, records, directives and reports for completeness, neatness, and accuracy • Prepare narrative briefs and reports of navigational operations and exercises
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • <i>NORM</i>, COMSUBLANT/COMSUBPACINST. 5400.29 • <i>System Operating Procedures</i>, SSN688/SSBN Volume 6 Part 1, Chapters 17 and 18 • <i>SSORM</i> COMSUBLANT/COMSUBPACINST5400.39 (SSN), and 5400.38 (SSBN) • <i>The American Practical Navigator Bowditch</i>, Pub. No. 9, Chapter 25 • <i>Joint Operation Order 2000/201</i>, COMSUBLANT/COMSUBPAC

ADVANCEMENT HANDBOOK FOR ETVC

<p><i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:</p>	<p>You can expect questions related to the administrative management of the Navigation Division, to include the development, procurement, maintenance, and disposition of required nautical charts, publications, reports and records.</p>
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ADVANCEMENT HANDBOOK FOR ETV3

General ET(V) <i>Skill Area</i>	Navigation
A <i>skill</i> you are expected to perform from the General Skill Area above:	Train all navigational watch personnel to perform as instructed by the Navigation and Piloting Bill
<i>Knowledge</i> you should have to perform this skill:	<p>Concepts applicable to the principles of prudent submarine navigation</p> <p>How to:</p> <ul style="list-style-type: none"> • Supervise the Navigation Division's training program • Administer watch qualifying tests and conduct interviews • Prepare piloting and open ocean watch bill assignments • Direct and supervise the piloting party • Monitor and enforce submarine navigation operating procedures and safety precautions • Provide backup to the Officer of the Deck in matters pertaining to safe navigation and rules of the road
<i>References</i> you should study to gain the knowledge you need to perform this skill:	<ul style="list-style-type: none"> • References listed for ETV3 through ETV1
<i>Exam Expectations.</i> These are subject areas you should know to help you answer exam questions correctly:	You can expect questions concerning safe submarine navigation and the application of U.S. Submarine Force standards to the navigational readiness of the ship.

Appendix 1

References Used in this Advancement Handbook

The references used to develop Electronic Technician Submarine Navigation (ETV) advancement exams fall into three groups. The first group includes all the publications and instructions listed in the *SWS and FBMWS Documentation Requirements List (DRL)*, SSP OD 43853, as required to be carried aboard SSBN submarines. These publications are generally only available to Special Programs organizations (SSBNs, TTFs, offcrews, etc.). The second group includes equipment specific technical manuals associated with your particular ship and systems. The third group includes the additional publications listed below. **Keep in mind that the ONLY publications you need to study prior to a specific exam are the publications listed on the exam specific-bibliography for that exam.**

Short Title	Long Title	Stocking Point
3-M Manual	Ship's Maintenance and Material Management (3-M) Manual, OPNAVINST 4790.3	Note 7
ATP 1 Vol. II, Chapter 2	Single Flags and Pennants, ATP 1 Vol. II; Chapter 2	Note 1
CATP2VO1U	Catalog of Maps, Charts, and Related Products; Hydrographic Products Information, CATP2VO1U	Note 4
CATP2VOL1UBD	Hydrographic Products Semiannual Bulletin Digest, CATP2VO1U	Note 4
CATP2VOL2CBD	Classified Hydrographic Products Semiannual Bulletin Digest, CATP2VOL2CBD	Note 4
Chart No. 1	U.S.A. Nautical Chart Symbols and Abbreviations, Chart No. 1	Note 4
CINCLANTFLT/ CINCPACFLTINST 4790.3	Joint Fleet Maintenance Manual, CINCLANTFLT/CINCPACFLT INST 4790.3	Note 2
CMS 1A	Communications Security Material System (CMS) Policy and Procedures Manual, CMS 1A	Note 9

CMS 5	Communications Security Material System (CMS) Cryptographic Equipment Information/Guidance Manual, CMS 5	Note 9
CMS 6	Secure Telephone Unit Third Generation (STU-III) Comsec Material Management Manual, CMS 6	Note 9
COMSUBLANT/ COMSUBPACINST C3500.1	COMSUBLANT/COMSUBPAC Joint Training Manual, COMSUBLANT/COMSUBPACINST C3500.1	Note 3, 6
COMSUBLANT/ COMSUBPACINST C3140.3	Submarine Tactical Oceanography, COMSUBLANT/COMSUBPACINST C3140.3	Notes 3 & 6
COMSUBLANT/ COMSUBPACINST 2301.1	Doctrine for Submarine Interior Communications, COMSUBLANT/COMSUBPACINST 2301.1	Notes 3 & 6 Fleet Publication CD-ROM
COMSUBLANT/ COMSUBPACINST 5601.4 (PUBSTAT)	Essential Operational Documentation for Submarines (PUBSTAT), COMSUBLANT/COMSUBPACINST 5601.4	Notes 3 & 6 Fleet Publication CD-ROM
COMSUBLANTINST S3140.1	Chart Allowances, COMSUBLANTINST S3140.1	Note 3
COMSUBPAC OPORD 205	Operation Order 205, COMSUBPAC OPORD 205	Note 6
COMSUBPACINST S3530.2	Chart Allowances, COMSUBPACINST S3530.2	Note 6
Dutton's Navigation and Piloting, 14 th Ed	Dutton's Navigation and Piloting, 14 th Ed U.S Naval Institute Press, Annapolis, MD	Note 5
FXP-1	ASW Exercise Manual, FXP-1	NTIC Series B1 CD-ROM (See Command NWP custodian)
Joint Operation Order 2000/201	COMSUBLANT/COMSUBPAC OPORD 2000/201, Annex C	Notes 3 & 6

MEASURE OP43P6	Metrology Automated System for Uniform Recall and Reporting (Users Manual), MEASURE OP43P6	Note 1
NAUTALMANAC	The Nautical Almanac	Note 4
NAVEDTRA 10047	Military Requirements for Chief Petty Officer, NAVEDTRA 10047	Note 1
NAVEDTRA 12014	Blueprint Reading and Sketching, NAVEDTRA 12014	Note 1
NAVEDTRA 12044	Military Requirements for Petty Officer Third Class, NAVEDTRA 12014	Note 1
NAVEDTRA 12045	Military Requirements for Petty Officer Second Class, NAVEDTRA 12045	Note 1
NAVEDTRA 12046	Military Requirements for Petty Officer First Class, NAVEDTRA 12046	Note 1
NAVEDTRA 12969	Shipboard Electronics Material Officer, NAVEDTRA 12969	Note 1
NAVEDTRA 12971	Naval Safety Supervisor, NAVEDTRA 12971	Note 1
NAVOSH MANUAL	Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat, Volume III, OPNAVINST 5100.19	Note 7
NAVSUP P-485	Afloat Supply Procedures, NAVSUP P-485	Note 1 or NAVSUP P-600 CD-ROM
NEETS	Navy Electricity and Electronics Training Series (See below)	Note 1
NEETS, Module 1	NEETS, Module 1 – Introduction to Matter, Energy, and Direct Current, NAVEDTRA B72-01-00-92	Note 1
NEETS, Module 2	NEETS, Module 2 – Introduction to Alternating Current and Transformers, NAVEDTRA 172-02-00-91	Note 1
NEETS, Module 3	NEETS, Module 3 – Introduction to Circuit Protection, Control, and Measurement, NAVEDTRA B72-03-00-93	Note 1

NEETS, Module 4	NEETS, Module 4 – Introduction to Electrical Conductors, Wiring Techniques, and Schematic Reading, NAVEDTRA B72-04-00-92	Note 1
NEETS, Module 5	NEETS, Module 5 – Introduction to Generators and Motors, NAVEDTRA B72-05-00-94	Note 1
NEETS, Module 6	NEETS, Module 6 – Introduction to Electronic Emission, Tubes, and Power Supplies, NAVEDTRA B72-06-00-92	Note 1
NEETS, Module 7	NEETS, Module 7 – Introduction to Solid-State Devices and Power Supplies, NAVEDTRA B72-07-00-92	Note 1
NEETS, Module 9	NEETS, Module 9 – Introduction to Wave-Generation and Wave-Shaping Circuits, NAVEDTRA 172-09-00-83	Note 1
NEETS, Module 10	NEETS, Module 10 – Introduction to Wave Propagation, Transmission Lines, and Antennas, NAVEDTRA B72-10-00-93	Note 1
NEETS, Module 11	NEETS, Module 11 – Microwave Principles, NAVEDTRA 172-11-00-87	Note 1
NEETS, Module 12	NEETS, Module 12 – Modulation Principles, NAVEDTRA 172-12-00-83	Note 1
NEETS, Module 13	NEETS, Module 13 – Introduction to Number Systems and Logic Circuits, NAVEDTRA B72-13-00-94	Note 1
NEETS, Module 14	NEETS, Module 14 – Introduction to Microelectronics, NAVEDTRA 172-14-00-84	Note 1
NEETS, Module 15	NEETS, Module 15 – Principles of Synchros, Servos, and Gyros, NAVEDTRA B72-15-00-93	Note 1
NEETS, Module 16	NEETS, Module 16 – Introduction to Test Equipment, NAVEDTRA B72-16-00-96	Note 1

NEETS, Module 18	NEETS, Module 18 – Radar Principles, NAVEDTRA 172-18-00-84	Note 1
NEETS, Module 19	NEETS, Module 19 – The Technician's Handbook, NAVEDTRA B72-19-00-92	Note 1
NEETS, Module 21	NEETS, Module 21 – Test Methods and Practices, NAVEDTRA B72	Note 1
NODORM	Standard Submarine Navigation/ Operations Department Organization and Regulation Manual, COMSUBLANT/ COMSUBPAC Instruction 5400.29	Notes 3 & 6
NOSPBCTATCSTN1	Current Tables, NOSPBCTATCSTN1	Note 4
NOSPBTECSTNSA1	Tide Tables, NOSPBTECSTNSA1	Note 4
NSTM 0901-LP-017-4250 CDROM S9086-AB-ROM-010	Naval Ships' Technical Manual Library	Note 1
NTP 13	U.S. Navy Flags, Customs, and Pennants, NTP 13	
NVPUB106	Atlas of Pilot Charts, NVPUB106	Note 4
NVPUB1310	Radar Navigation, National Imagery and Mapping Agency, NVPUB 1310	Note 4
NVPUB217	Maneuvering Board Manual, National Imagery and Mapping Agency, NVPUB 217	Note 4
NVPUB606	Guide to Marine Observing and Reporting	Note 4
NVPUB9V1	The American Practical Navigator: Bowditch, NVPUB106	Note 4
NWP 3-21.71	Target Motion Analysis, NVPUB106	Note 1 or NTIC series B1 CD-ROM
NWP 3-21.71, Vol. 1	Target Motion Analysis (TMA) Techniques, NWP 3-21.71, Vol. 1	Note 1 or NTIC series B1 CD-ROM
OPNAVINST 3000.8	Nuclear Warships Authorized Berths, NWP 3-21.71, Vol. 1	Note 7

OPNAVINST 3100.7	Ship's Deck Log, NWP 3-21.71, Vol. 1	Note 7
OPNAVINST 5100.1	Department of the Navy Information and Personnel Security Program Regulation, OPNAVINST 5100.1	Note 7
SORM	Standard Organization and Regulations Manual (SORM), OPNAVINST 3120.32	Note 7
SPAWAR EE170-AA-OMI-010/020/030	Satellite Signals Navigation Set AN/WRN-6(V), Volume 1, 2, and 3	Note 1
SSORM (SSBN)	Standard Submarine Organization and Regulations Manual, COMSUBLANT/ COMSUBPAC 5400.38 (SSBN)	Notes 3 & 6 Fleet Publication CD-ROM
SSORM (SSN)	Standard Submarine Organization and Regulations Manual, COMSUBLANT/ COMSUBPAC 5400.39 (SSN)	Notes 3 & 6 Fleet Publication CD-ROM

<p>Submarine onboard training (SOBT) materials</p>	<ul style="list-style-type: none"> • Inertial Navigation Principles (Trident), ICW-N-003 • Strategic Weapons System Overview, ICW-N-001 • Navigation subsystem reconfiguration (Trident), ICW-N-002 • NSS A-Scan (Trident II), VT-N-038 • AN/WRN-6 (GPS) Operations, CBI-N-9873 • AN/WRN-6 (GPS) Trainer Version 1.5, CBI-N-9451 • SSN Navigation Handbook, SSNNAV-002/97 • AN/WSN-3 Operator ICW, CBI-N-9653 • Depth Sensing System, CBI-LQ-9723 • Tanks, Compartments, an Ship Characteristics, CBI-LQ-9724 • BCP and SCP, CBI-LQ-9733 • Basic Submarine Navigation, (SVT-N-9310) • AN/BQN-17 Fathometer, (803636) • Plotting Mechanics, (SVT-P-9307) • Rules of the Nautical Road, (SCP-N-001) • Flags and Pennants, (SCP-N-002) • Maneuvering Board, SCP-N-004 • Maneuvering Board Operation, CBI-N-9757 • Basic Submarine Navigation, SVT-N-9312 • Submarine Radar Navigation, SVT-N-001 • SUB Electrical Safety, SOBT #17 • Electrostatic Discharge (ESD) Precautions and Procedures, SVT-S-200 • Electrostatic Discharge (ESD), ICW-N-001^{A-7} • ESD, The Invisible Threat, SOBT 	<p>Note 8</p>
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SW289-AK-MMO-010 MK 19 Mod 19	Mark 19, Mod 19 Description, Operation, and Maintenance	Note 1
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Note 1: To order, MILSTRIP to NAVICP Philadelphia (Stock Number from NAVSUP P2002 or via internet @ <http://www.nll.navsup.navy.mil>)

Note 2: Internet <http://www.submepp.navy.mil/PRODSERV.HTM>

Note 3: Ltr Request to: Commander Submarine Force
U.S. Atlantic Fleet
7958 Blandy Rd
Norfolk, VA 23551-2492

Note 4: National Imagery and Mapping Agency (NIMA), CAP1VOL.
Customer Help Desk: 1-800-455-0899, DSN: 490-1236,
COM: 314-260-1236
Internet, <http://www.uscg.mil/vtm/pages/rules.htm>

Note 5: Commercial Purchase

Note 6: Ltr Request to: Commander Submarine Force
U.S. Pacific Fleet
100 Morton St.
Pearl Harbor, HI 96860-6543

Note 7: Internet @ <http://neds.nebt.daps.mil/>

Note 8: EMAIL- SOBT@mail.csg2.navy.mil/ or call DSN: 694-3737,
Comm: 860-694-3737

Note 9: Director, COMSEC Material System
3801 Nebraska Ave NW
Washington D.C. 20393-5453
(See your CMS Custodian)